

## **2 EXISTING CONDITIONS**

The study team conducted an extensive data collection effort between March and July 2003. Data was collected on existing conditions in the Friendship Heights Transportation study area in order to investigate and verify transportation issues and concerns raised by area residents. The quantitative assessment of existing conditions based on collected data was supplemented through field observations and evaluations during peak and off-peak hours.

### **2.1 MAJOR ROADWAYS**

The Friendship Heights Transportation study area is in northwest Washington, D.C., bordering Montgomery County, Maryland. The boundary of the study area is defined by Western Avenue N.W. to the north, 41<sup>st</sup> Street N.W. to the east, Fessenden Street N.W. to the south, and 45<sup>th</sup> Street to the west (Exhibit 1).

Street classification systems define the hierarchy of streets. Within the study area, the following street classifications are found:

- Principal Arterial
  - Wisconsin Avenue
- Minor Arterial
  - Western Avenue
  - Military Road
- Collectors
  - 43<sup>rd</sup> Street between Military Road and Jenifer Street
  - Jenifer Street between 43<sup>rd</sup> Street and Western Avenue
- Local Streets
  - All other streets

**Exhibit 1: Study Area**

The following section provides a physical description for each major roadway in the study area.

### **2.1.1 *Wisconsin Avenue***

Wisconsin Avenue is a two-way, six lane principal arterial that traverses the study area in a northwest-southeast direction. The posted speed limit is 30 mph. Three types of metered on-street parking (30-minute, 1-hour, and 2-hour) are available along Wisconsin Avenue in the study area between 7AM and 4PM. On-street parking is prohibited during morning peak-hours between 7:00AM and 9:30AM southbound and during afternoon peak-hours between 4:00PM and 6:30PM northbound to accommodate heavy commuter traffic volumes. All intersections, with the exception of Garrison Street, are signalized and have pedestrian crossing markings with concurrent pedestrian signal phasing.

There is no exclusive left or right-turn lane provided along Wisconsin Avenue in the study area. Left turns are permitted at Jenifer, Harrison, Garrison, and Fessenden Streets in both directions with certain restrictions noted below. On Wisconsin Avenue northbound, an advance green phase for the left-turn movement is given at Jenifer Street. At the Western Avenue intersection, no left-turn is allowed from northbound Wisconsin Avenue; however, southbound Wisconsin Avenue in Maryland provides a shared left-turn lane with a left-turn green time phase. No left-turns are allowed on Wisconsin Avenue northbound at Garrison Street between 4:00PM and 6:30PM and Wisconsin southbound at Jenifer Street between 7:00AM and 7:00PM, Monday through Friday. Also no right turns are allowed on red at Western Avenue and Fessenden Street from northbound Wisconsin Avenue. Exhibit 2 shows the lane configuration at all intersections of Wisconsin Avenue.

Attractive retail and commercial developments are found along Wisconsin Avenue. Major establishments such as Chevy Chase Pavilion, Mazza Gallerie, Borders Bookstore, and Hecht's (in Montgomery County) are located between Western Avenue and Jenifer Street, providing abundant shopping opportunities for local residents and visitors (see Exhibit 3). Two of the restaurants on Wisconsin Avenue, Maggiano's and Bambule, provide valet parking service for their customers. The Maggiano's valet parking service begins at 5PM and uses a parking bay on Wisconsin Avenue that can store approximately two vehicles.

Wisconsin Avenue in the study area is also a major transit center. WMATA's Friendship Heights Metrorail station has entrances at the four corners of the Wisconsin and Western Avenue intersection, with another entrance at the intersection of Wisconsin Avenue and Jenifer Street. Moreover, many bus routes use the Wisconsin Avenue corridor (more detail provided in section 2.2).

### **2.1.2 *Western Avenue***

Western Avenue is a two-way, mostly four lane principal arterial (a section of Western Avenue between Wisconsin Circle and Wisconsin Avenue increases up to six lanes) that traverses the study area in a northeast-southwest direction. The posted speed limit is 25 mph. All intersections are signalized and no on-street parking is allowed in this section of Western Avenue.

Exclusive left-turn lanes in southwest-bound direction are provided at Military Road, 44<sup>th</sup> Street, and Jenifer Street. Left turns are permitted at 41<sup>st</sup> Street and McKinley Street (except between 7:00AM and 9:30AM), Livingstone Street, and 45<sup>th</sup> Street. Exclusive left-turn lanes in the northeast-bound direction are provided at Jenifer Street, 44<sup>th</sup> Street, Wisconsin Avenue, Wisconsin Circle, and at an entrance to the Chevy Chase Center. No left turns are allowed southwest-bound at the intersection of Wisconsin Avenue. Likewise, no left turns are permitted northeast-bound at Cortland Road (opposite side of 45<sup>th</sup> Street in Montgomery County) from 4:00PM to 6:30PM. Exclusive right turn lanes with signal intersection are provided at Military Road (northeast-bound) and at Wisconsin Avenue (southwest-bound). Right turns are permitted at all other intersections. No turns are allowed on red on Western Avenue northeast-bound at 44<sup>th</sup> Street. Exhibit 2 displays the lane configuration at all intersections of Western Avenue.

Three major commercial/retail establishments, Lord & Taylor and Mazza Gallerie in the District, and Hecht's in Montgomery County are located between Wisconsin Avenue and 45<sup>th</sup> Street. The Washington Clinic (closed for redevelopment) and The Louise Lisner Retirement Home are located on Western Avenue between Military Road and Livingston Street. GEICO offices, Hecht's, and the Chevy Chase Land Company are located on the Montgomery County side (see Exhibit 3 for land use characteristics). Pedestrian crossings on Western Avenue are allowed at 45<sup>th</sup> Street, 44<sup>th</sup> Street, Wisconsin Avenue, Military Road, Wisconsin Circle, Livingston Street, and 41<sup>st</sup> Street. No pedestrian crossing stripe is provided on Western Avenue at Jenifer Street.

### **2.1.3 Military Road**

Military Road is a two-way, two-lane minor arterial that traverses the study area in an east-west direction, with the road terminating at Western Avenue. The posted speed limit is 25-mph. A signalized exclusive left-turn lane is provided at Western Avenue and right-turns are permitted. Left-turns (eastbound) and right-turns (westbound) are permitted at 43<sup>rd</sup> Street, 42<sup>nd</sup> Place, 42<sup>nd</sup> Street, and Belt Road. While right-turn movements are allowed at 41<sup>st</sup> Street and Reno Road, Military Road eastbound movements onto 41<sup>st</sup> Street/Reno Road are prohibited. Left-turn movements on Military Road westbound at 41<sup>st</sup> Street and Reno Road are also prohibited between 7:00AM and 6:30PM.

There are two signalized intersections at Western Avenue and 41<sup>st</sup> Street/Reno Road. Left- and right-turn movements are allowed from all local streets except at 42<sup>nd</sup> Street, where only right-turn movements are permitted. On-street parking is allowed on the eastbound side of Military Road between 43<sup>rd</sup> Street and 41<sup>st</sup> Street. Sidewalks are provided in both directions.

The Embassy Suites (part of the Chevy Chase Pavilion building) on Military Road provides a hotel guest drop-off bay for guests to load and unload. The Embassy Suites and the Chevy Chase Pavilion also provide public parking and have a delivery truck loading zone that is accessed from Military Road.

#### **2.1.4 Additional Significant Streets – Jenifer Street (between 43<sup>rd</sup> Street and Western Avenue, 43<sup>rd</sup> Street (between Military Road and Jenifer Street), and Fessenden Street**

The Jenifer Street segment between 43<sup>rd</sup> Street and Western Avenue is a two-way, two-lane collector road connects Wisconsin and Western Avenues. 43<sup>rd</sup> Street between Military Road and Jenifer Street is also a two-way, two-lane collector road that connects Wisconsin Avenue and Military Road. Fessenden Street is a two-way, two-lane collector road that connects Wisconsin Avenue with local streets. In addition, Jenifer Street is bordered by office and retail establishments west of Wisconsin Avenue and has metered on-street parking. Fessenden and 43<sup>rd</sup> Streets, in the study area, have mixed housing types from single-family homes to townhomes. All three streets provide key linkages to the major roadways in the study area.

While on-street parking is allowed on 43<sup>rd</sup> Street, Jenifer Street has both metered and non-metered parking spaces between 43<sup>rd</sup> and 44<sup>th</sup> Street. Fessenden Street allows on-street parking in the eastbound direction between 45<sup>th</sup> Street and Wisconsin Avenue and westbound between 41<sup>st</sup> and 42<sup>nd</sup> Streets.

#### **2.1.5 Local Streets**

Local streets in the study area are two-directional roads except Belt Road between Military Road and Jenifer Street, which is one-way street southbound. On-street parking is allowed in one or both directions on these streets. There are a few commercial/office establishments on Harrison, Garrison, and Fessenden Streets near the intersection with Wisconsin Avenue and some metered short-term parking is provided. The rest of the local streets go through single-family residential neighborhoods and allow on-street parking.

**Exhibit 2: Lane Configurations and Traffic Control**

**Exhibit 3: Land Use Map**

## 2.2 PUBLIC TRANSPORTATION

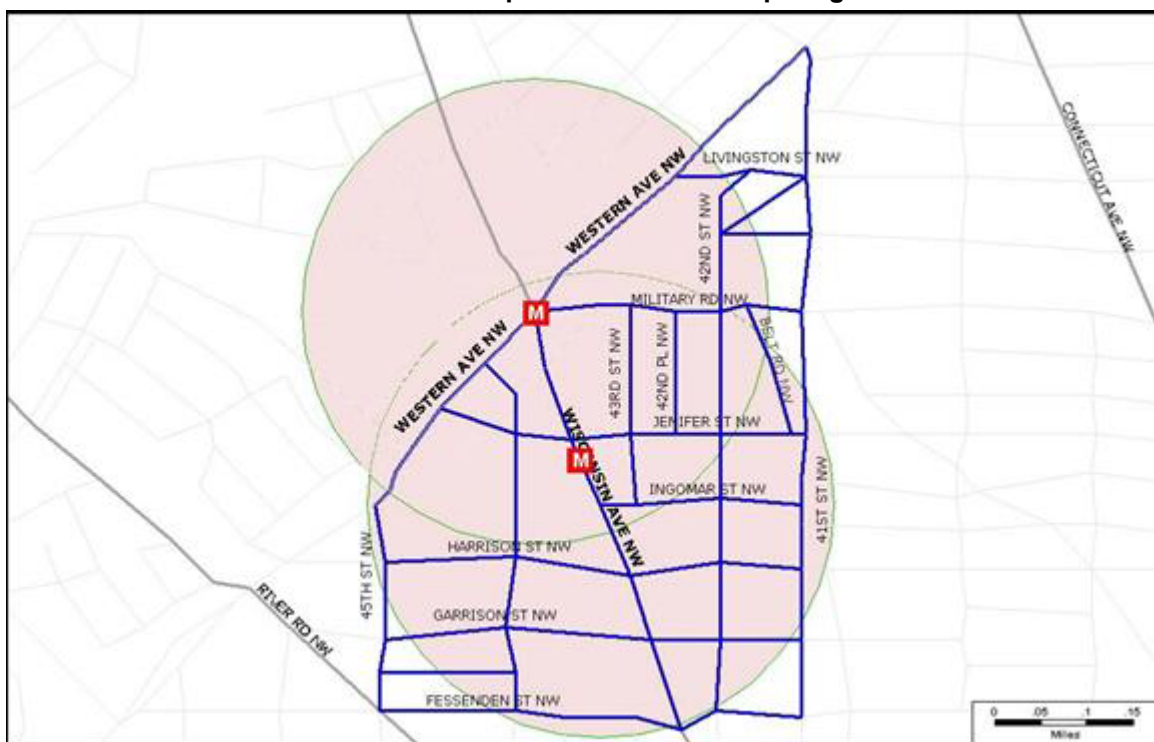
Washington Metropolitan Area Transit Authority provides rail and bus services in the Friendship Heights area. Ride On Montgomery County transit service also operates bus service on the Montgomery County side of the Friendship Heights community, strengthening the transit connectivity between the District of Columbia and Montgomery County. Details about the services are provided below.

### 2.2.1 WMATA Metrorail

The WMATA Metrorail Red line serves residents and visitors at the Friendship Heights station. There are a total of five Metro entrances and exits: three in the District of Columbia (two at the Wisconsin and Western Avenue intersection, and one on Wisconsin Avenue between Jenifer and Harrison Streets) and two in Montgomery County (at the Wisconsin and Western Avenues intersection). Service begins at 5:30AM and the last service departs from Shady Grove station at 12:20AM and from Glenmont station at 11:50PM.

As shown in Exhibit 4, all local residents in the study area have easy access to one of five Friendship Heights Metro entrances. Most residents in the study area are located within a quarter-mile of the station, which is approximately a 5-minute walk for most residents.

**Exhibit 4: Quarter Mile Contour Map from the Friendship Heights Metrorail Station**



The Washington Metropolitan Area Transit Authority (WMATA) regularly conducts a Metrorail passenger survey to estimate the percentage of total ridership residing in each jurisdiction. The results from the 2002 WMATA Metrorail Passenger Survey show that approximately 8,900 patrons use the Friendship Heights Metro Station. Most patrons (64 percent) walk to the station while approximately 14 percent of Metro users arrive at the station by WMATA or Ride On bus. The survey results also indicated that 36 patrons got to the station by bicycle (during this particular survey period). Currently, WMATA provides 30 bicycle racks (18 at the northeast corner of the Wisconsin and Western Avenue intersection and 12 at the Jenifer Street Metro entrance) and 22 lockers at the Friendship Heights station. At the time of the field observation, less than 50 percent of racks and 73 percent of lockers were utilized.

### **2.2.2 WMATA Bus Lines**

WMATA provides bus service in the study area along Wisconsin and Western Avenues. As shown in Exhibit 5, there are six WMATA lines, each with one to four routes, and two Ride On Montgomery County Transit lines. Some of the routes terminate in Friendship Heights. WMATA's West Garage is located in the study area between Wisconsin Avenue and 44<sup>th</sup> Street and between Jenifer and Harrison Streets. Approximately 120 WMATA buses are stationed at this facility. The garage does not have direct access to Wisconsin Avenue; all buses access the garage from 44<sup>th</sup> Street.

**Exhibit 5: Metro Transportation Facilities and Routes**

Massachusetts Avenue Line (Route N 2, 3, 4 and 6)

WMATA Routes N2, 3, and 4 operate during weekdays and Route N6 operates daily between the Friendship Heights Metrorail station and Farragut Square/Federal Triangle. Routes N3, 4 and 6 enter the study area via Western Avenue (west of Wisconsin Avenue) and Route N2 enters via Wisconsin Avenue. Route N2 starts its operation at 5:49AM and ends at 6:47PM (weekdays only). Service for Routes N3, 4, and 6 begins at 5:36AM and extends to after midnight (Friday operation extends to 2:10AM). Route N6 operates weekend service: Saturday (5:47AM-1:37AM) and Sunday (6:40AM-10:50AM) and has limited holiday service. All routes have variable headways (period of time between scheduled buses) ranging from 9 minutes to 30 minutes.

Military Road-Crosstown Line (Route E 2, 3, 4)

WMATA Routes E 2, 3, and 4 operate daily between the Friendship Heights Metrorail station and Ivy City, entering the study area via Western Avenue (east of Wisconsin Avenue). Service begins at 5:18AM and ends at 1:55AM on weekdays. Saturday and Sunday services operate on a similar schedule with longer headways. The routes also provide limited holiday service.

Bethesda Reverse Commute Line (Route B11)

WMATA Route B11 is a commuter service to Bethesda connecting Rosslyn, Virginia and the Medical Center in Maryland, entering the study area (Friendship Heights Metro Station) via Wisconsin Avenue. Route B11 operates Monday through Friday during morning and afternoon peak-hours (6:00AM-8:42AM and 4:00PM-7:03PM), with a headway of 20 minutes.

Chevy Chase Line (Route E6)

WMATA Route E 6 operates Monday through Friday between the Friendship Heights Metrorail station and the Knollwood Retirement Home, entering the study area via Western Avenue (east of Wisconsin Avenue). Route E6 operations begin at 6:17AM and ends at 8:52PM.

Pennsylvania Avenue Line (Route 32, 34, 35, 36)

WMATA Routes 32, 34, 35, and 36 operate seven days a week between the Friendship Heights Metrorail station, Georgetown, The Mall, and Southern Avenue Station in Maryland, entering the study area via Wisconsin Avenue. Weekday service begins at 4:16AM and ends at 2:18AM. Saturday service begins at 4:40AM and ends at 2:18AM. Sunday service begins at 4:42AM and ends at 1:40AM. This route also provides limited holiday service. All routes have variable headways ranging from 8 minutes to 30 minutes.

Connecticut Avenue – Maryland Line (Route L 7 and 8)

WMATA Routes L7 and 8 operate seven days a week between the Friendship Heights Metrorail station and Aspen Hill/Wheaton in Maryland, entering the study via Western Avenue (east of Wisconsin Avenue). The operation begins at 5:20AM and ends at 11:00PM with variable headways ranging from 5 minutes to 30 minutes.

### **2.2.3 Ride On Bus Lines**

There are five Ride On operations starting and ending at the Friendship Heights Metro Station (Route 1&11, 23, 27, 29, and 42). Three of these services, Routes 1&11 and 29, operate on

Western Avenue in the study area. Routes 23, 27, and 29 travel Wisconsin Avenue in outside of the study area.

#### Ride On Routes 1 & 11

Ride On Montgomery County Transit service Routes 1 & 11 operate between the Friendship Heights and Silver Spring Metrorail stations. Route 1 operates daily and Route 11 operates only in peak hours Monday through Friday and not on holidays. Operation begins at 5:07AM and ends at 10:25PM with variable headways ranging from 7 minutes to 30 minutes.

#### Ride On Route 29

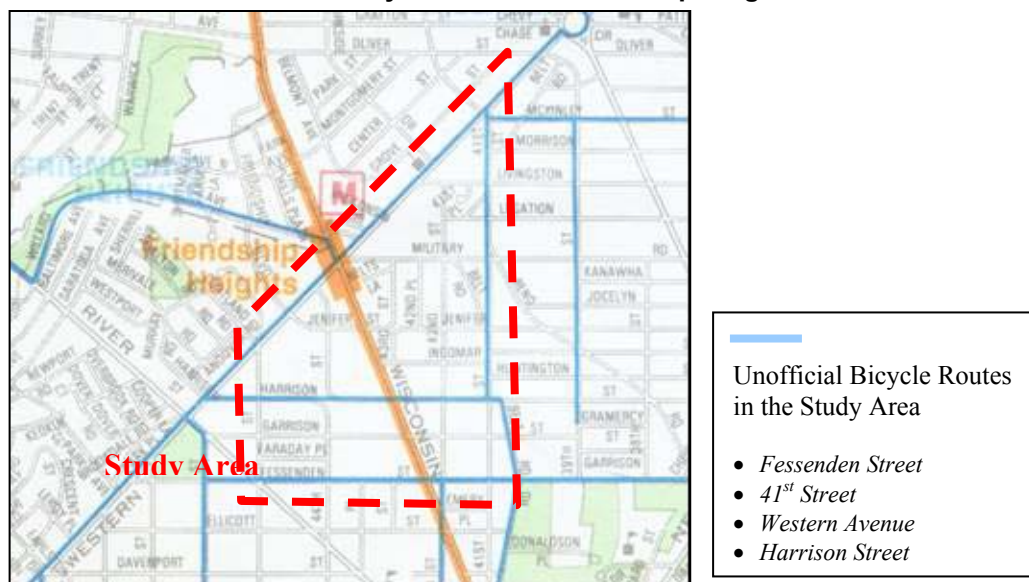
Ride On Route 29 operates daily between the Friendship Heights and Bethesda Metrorail stations. The operation begins at 5:35AM and ends at 9:59PM with variable headways ranging from 30 minutes to 32 minutes.

Detailed bus schedules and route information are provided in Appendix A.

## 2.3 BICYCLE ROUTE

The Washington DC Regional Bike Map was produced jointly by the Metropolitan Washington Council of Governments (MWCOC) and ADC The Map People of Alexandria, Inc., to assist persons who want to travel in the Washington metro area by bicycle. Bike routes have been identified by experienced cyclists for scenic quality or links to other routes. Exhibit 6 shows the Friendship Heights section of the unofficial bike route illustrated in the ADC map.

**Exhibit 6: ADC's Unofficial Bicycle Route in Friendship Heights**



Source: ADC 5<sup>th</sup> Edition: Washington DC Regional Bike Map

The District of Columbia Department of Transportation Bicycle Program began preparation of the DC Bicycle Master Plan in fall of 2002. The master plan will include comprehensive mapping and analysis of existing conditions on all of the District's roadways, identify a bicycle route network, and develop policy and design guidelines. The complete DC bicycle Master Plan is scheduled to be available by summer of 2004.

## **2.4 HISTORICAL MARKERS**

An important element to be considered in the transportation study is identifying and locating items, sites, or buildings of historical significance. A search of the District of Columbia Inventory of Historic Sites identified two historical markers which are National Register Properties in the study area. These two historical markers include:

- Maryland/DC border marker located at the northeast corner of the Wisconsin Avenue and Western Avenue intersection, placed in 1932 by the Garden Club of America (Exhibit 7).
- Maryland/United Federal boundary stone marker located at the northeast corner of Western Avenue and Cedar Lane (Maryland), placed in 1792. The associated historical marker was placed in 1965 by the Daughters of the American Revolution (Exhibit 8).

**Exhibit 7: Maryland/DC Border Mark at the Intersection of Wisconsin and Western Avenue**



**Exhibit 8: Maryland/United Federal Boundary Stone at the intersection of Western Avenue and Cedar Lane**



The majority of the commercial structures on Wisconsin and Western Avenues date from the 1960s and later although small pockets of ca.1930s brick commercial structures were also identified. Residential buildings on the side streets off Wisconsin and Western avenues are a mixture of free standing homes, duplexes, and rowhouses dating from c.1920-1940.

## **2.5 RESIDENT CONCERNS AND ISSUES**

The Study Team and the District of Columbia Department of Transportation (DDOT) have received important feedback and insightful comments from residents in the Friendship Heights area throughout the course of the Friendship Heights Transportation study. Public meetings were held on February 19, May 19, June 25, and September 4 at St. Mary's Armenian Church located at the intersection of Fessenden Street and 42<sup>nd</sup> Street, NW. Comments were also received via email and letter.

Numerous residents expressed their concerns on issues such as cut-through traffic, truck traffic, speeding, parking, u-turns, queuing/back-ups, and pedestrian safety. Exhibits 9 through 11 illustrate locations of concern as expressed by residents during the Study Team's public outreach effort.

**Exhibit 9: Resident Concerns and Issues: Speeding and Queuing/Back-ups**

**Exhibit 10: Resident Concerns and Issues: Cut-Through and Truck/Bus Traffic**

**Exhibit 11: Resident Concerns and Issues: Parking and Other Issues**

## 2.6 DATA COLLECTION AND FIELD OBSERVATION

Data collection and analyses were undertaken in accordance with traffic engineering principles and procedures established by the Institute of Transportation Engineers (ITE) and the Federal Highway Administration (FHWA). In order to collect representative data and field observations, data was collected on a “typical” weekday (e.g., mid-week, sunny day, etc.) and weekends, which were not impacted by national and local holidays, unfavorable weather, or other factors such as traffic accidents.

Data collection specifically targeted issues and concerns raised by residents throughout the study, which were discussed in the previous section. The major data collection efforts and field observations included:

- traffic volumes (including mechanical counts and peak-hour turning movements)
- vehicle classification
- speeds and travel time
- vehicle queues
- truck origins and destinations and cut-through volumes (on local streets)
- safety (accident data and pedestrian crossing)
- parking (utilization and violations)

Locations for data collection were determined in the study scope which was developed in a cooperative effort with the ANC. Additional locations were investigated during the study based on comments received from residents. The following sections present a detailed description of the data collection and field observation process as well as summary findings.

### 2.6.1 Traffic Volumes

Traffic volume in the study area was analyzed by examining average daily traffic volumes and peak-hour turning movements at key intersections.

#### Mechanical Traffic Volumes

Traffic counts were collected using mechanical tube devices over a one-week period at six roadway segments which were identified in the study scope:

1. Military Road, N.W. between Western Avenue and 41<sup>st</sup> Street
2. Wisconsin Avenue, N.W. between Jenifer Street and Ingomar Street
3. Western Avenue, N.W. between Livingston Street and Wisconsin Avenue
4. 42<sup>nd</sup> Street N.W. between Jenifer Street and Ingomar Street
5. 41<sup>st</sup> Street N.W. between Jenifer Street and Ingomar Street
6. River Road, N.W. between Fessenden and Ellicott Street

As expected, Wisconsin Avenue had the highest volume of traffic in the study area, carrying more than 28,000 vehicles per day (vpd). The second highest daily traffic volumes were recorded on Western Avenue with almost 24,000 vpd. Average daily weekday and weekend traffic volumes are illustrated in Exhibit 12.

Comparisons between Saturday traffic and weekday traffic yielded interesting results. Military Road recorded almost no traffic volume difference between weekdays and Saturday. Higher levels of shopping and other leisure activities contribute to higher Saturday traffic volumes. Wisconsin Avenue and 42<sup>nd</sup> Street also experienced very small differences in traffic volumes between weekdays and Saturday, two percent and eight percent, respectively. However, a larger traffic volume difference between weekdays and Saturdays was observed on Western Avenue, 41<sup>st</sup> Street, and Reno Road, with difference of 15 percent, 24 percent, and 30 percent, respectively, indicating the high weekday commuter traffic preference for these routes.

Detailed mechanical count data is provided in Appendix B.

### **Turning Movement Counts**

Field observations of traffic turning movement counts were conducted at the following twelve key intersections:

1. Western Avenue at 41<sup>st</sup> Street, N.W.
2. Western Avenue at Military Road, N.W.
3. Wisconsin Avenue at Western Avenue, N.W.
4. Western Avenue at 44<sup>th</sup> Street, N.W.
5. Western Avenue at Jenifer Street, N.W.
6. Wisconsin Avenue at Jenifer Street, N.W.
7. Wisconsin Avenue at Harrison Street, N.W.
8. Wisconsin Avenue at Garrison Street, N.W.
9. Wisconsin Avenue at Fessenden Street, N.W.
10. Military Road at 43<sup>rd</sup> Street, N.W.
11. Military Road at 41<sup>st</sup> Street, N.W.
12. Military Road at Reno Road, N.W.

The counts were collected during morning (6:30AM-9:30AM) and afternoon (3:30PM-6:30PM) peak-periods, on a typical weekday (Tuesday, Wednesday, or Thursday) during March, April, and May 2003. The traffic volumes shown in Exhibits 13 through 15 reflect directional flows toward the District of Columbia in the morning and away from the District of Columbia in the evening, consistent with commuting patterns. Based on detailed turning movement counts (see Appendix C), the morning and afternoon peak-hours are generally between 7:45-8:45AM and between 5:15-6:15PM and 5:30-6:30PM.

**Exhibit 12: Average Weekday and Weekend Daily Traffic Volumes**

**Exhibit 13: Weekday AM Peak Hour Traffic Turning Movement Volumes**

**Exhibit 14: Weekday PM Peak Hour Traffic Turning Movement Volumes**

**Exhibit 15: AM and PM Peak-Hours at Key Intersections**

Intersection	AM Peak	PM Peak
Western Avenue at 41 <sup>st</sup> Street	8:15-9:15	5:15-6:15
Western Avenue at Military Road	7:30-8:30	5:30-6:30
Wisconsin Avenue at Western Avenue	7:45-8:30	5:15-6:15
Western Avenue at 44 <sup>th</sup> Street	8:30-9:30	4:00-5:00
Western Avenue at Jenifer Street	7:45-8:45	5:30-6:30
Wisconsin Avenue at Jenifer Street	7:45-8:45	5:15-6:15
Wisconsin Avenue at Harrison Street	8:00-9:00	5:30-6:30
Wisconsin Avenue at Garrison Street	7:45-8:45	5:30-6:30
Wisconsin Avenue at Fessenden Street	7:45-8:45	5:30-6:30
Military Road at 43 <sup>rd</sup> Street	7:45-8:45	5:15-6:15
Military Road at 41 <sup>st</sup> Street	7:30-8:30	5:15-6:15
Military Road at Reno Road	7:45-8:45	5:15-6:15

### 2.6.2 Vehicle Classification

The mechanical traffic counters record vehicle classification information as well as traffic counts, using a vehicle classification guideline from the Federal Highway Administration (FHWA) and American Association of State Highway and Transportation Officials (AASHTO). Four major vehicle classifications, passenger cars, bus, light trucks, and heavy trucks, were summarized in order to identify the volume of non-passenger-vehicle traffic and vehicle types in the study area. Exhibit 16 demonstrates that auto traffic contributes from 88 percent to 95 percent of all traffic on the recorded streets.

**Exhibit 16: Average Daily Traffic Classified by Vehicle Types**

	Auto (%)	Buses (%)	Light Trucks (%)	Heavy Trucks (%)	Total Traffic Volume
<b>Military Road N.W. (East of 43<sup>rd</sup> Street)</b>					
Eastbound	5,212 (91%)	39 (1%)	333 (6%)	149 (3%)	5,756
Westbound	5,132 (93%)	22 (<1%)	276 (5%)	108 (2%)	5,545
<b>Wisconsin Ave (between Jenifer St. – Ingomar St.)</b>					
Northbound	11,170 (95%)	47 (<1%)	305 (3%)	275 (2%)	11,796
Southbound	11,532 (94%)	50 (<1%)	399 (3%)	257 (2%)	12,238
<b>Western Ave (between Livingston St.-Wisconsin Ave)</b>					
Eastbound	8,441 (94%)	38 (<1%)	310 (3%)	224 (3%)	9,012
Westbound	9,631 (94%)	36 (<1%)	335 (3%)	217 (2%)	10,218
<b>41st Street (between Jenifer St. – Ingomar St.)</b>					
Northbound	1,111 (90%)	4 (<1%)	20 (2%)	92 (8%)	1,235
Southbound	950 (92%)	2 (<1%)	8 (1%)	68 (7%)	1,034
<b>42nd Street (between Jenifer St. – Ingomar St.)</b>					
Northbound	379 (88%)	1 (<1%)	27 (6%)	17 (4%)	428
Southbound	431 (94%)	0 (<1%)	18 (4%)	7 (2%)	460

Notes:

1. FHWA F Scheme and Numetrics Vehicle Length vehicle classification methods were used in the study. Numetric method was used for the Western Avenue and Wisconsin Avenue data collection sites because of multi-lane roadway.
2. Light trucks are defined in this study as two-axle, four-tire trucks.
3. The data is based on one-week mechanical traffic counts.

As expected, the three arterials, Military Road, Wisconsin Avenue, and Western Avenue had a high volume of light and heavy trucks. The three arterials had similar proportions of heavy trucks at two to three percent of total volume. Military Road had the highest proportion of light trucks, from five to six percent of total traffic volume. The light truck category includes FedEx and UPS delivery trucks.

Military Road had a relatively higher percentage of bus traffic than other two arterial roadways while none of the WMATA bus routes serve this section of Military Road. This may be due to tour buses going to the Embassy Suites (located at the intersection of Military Road and Western Avenue) or beyond, or to WMATA buses returning to the West Garage (located between Wisconsin Avenue and 44<sup>th</sup> Street and between Jenifer and Harrison Streets). Wisconsin Avenue and Western Avenue had lower bus volumes despite several WMATA bus routes operating along these roadways in the study area. WMATA buses travel from both the southwest and northeast directions of Western Avenue to the Friendship Heights Metro station. However, on Western Avenue, data was collected only on the east side of Western Avenue between Livingston Street and Wisconsin Avenue. Bus volumes on Western Avenue may therefore be understated.

It was also noted that truck traffic counts on northbound 41<sup>st</sup> and 42<sup>nd</sup> Streets were higher than southbound. There were 112 light and heavy trucks recorded on northbound 41<sup>st</sup> Street with 76 trucks southbound. Northbound 42<sup>nd</sup> Street had a total of 44 light and heavy trucks and 25 trucks southbound.

#### **Additional Vehicle Classification Efforts on 43<sup>rd</sup> Street and Garrison Street**

In response to residents' concerns about truck cut-through traffic on 43<sup>rd</sup> Street and Garrison Street, an additional traffic count was collected on 43<sup>rd</sup> Street from Military Road to Jenifer Street on June 12, 2003 and on Garrison Street from 44<sup>th</sup> Street to 45<sup>th</sup> Street on July 17, 2003. Garrison Street was revisited on September 12 and 17 for a brief data validation due to original data was collected in a summer month. The field observation on 43<sup>rd</sup> Street recorded over 1,400 vehicles (truck and auto, both directions) from 9:00AM to 6:30PM. Of the over 1,400 vehicle counts recorded, a total of 28 trucks and commercial vans (2 percent of the total) were counted. This included 18 light trucks, four heavy trucks, and nine commercial vans.

The field observation on Garrison Street recorded approximately 450 vehicles (trucks and auto, both directions) from 8:15AM to 6:00PM. Of the 450 vehicles, a total of 47 trucks and commercial vans (10 percent) were counted, which included 25 commercial vans, 18 light trucks, and four heavy trucks. During the data validation process, 19 trucks were observed during morning peak hours (6:30AM-9:30AM) and 16 trucks during afternoon peak hours (4:15PM-6:15PM), which was similar to the original finding.

Appendix D presents detailed vehicle classification data at five roadway segments discussed above, and Appendix B shows vehicle classification results for 43<sup>rd</sup> Street and Garrison Street along with traffic count data.

### **2.6.3 Speed and Travel Time**

Driving speed and travel times on major roadways are important measures of existing traffic conditions. Speed data was collected at six locations, where mechanical traffic counts were recorded. As shown in Exhibit 17, the average speeds (calculated based on one-week counts) on key roadways in the study area were generally at the posted speed or slower. However, on Military road and 41<sup>st</sup> Street, about 15 percent of the traffic exceeded the speed limit by 6 mph and 4 mph, respectively. On River Road at the Fessenden Street intersection, the mean speed of recorded vehicles exceeded the posted speed by 13mph. More details on average daily traffic speed are shown in Appendix B, presented with mechanical traffic counts.

Additionally, in response to residents' concerns, speed data was also recorded for Garrison Street between 44<sup>th</sup> and 45<sup>th</sup> Streets on July 17, 2003 between 8:15AM and 6:00PM. A total of 398 records of vehicle speed data were collected. Average speeds going westbound and eastbound on Garrison Street were 26mph and 25mph, within the range of the posted speed limit. During the observation, a total of 21 recorded vehicles (a half percent) were traveling at speeds exceeding the posted speed limit by 6mph.

**Exhibit 17: Average Travel Speed Recorded – Mechanical Traffic Count/Speed**

## 2.6.4 Travel Time

Floating car surveys were conducted to observe typical speeds and travel times along Wisconsin Avenue (between Ellicott Street, DC and Willard Street, Maryland), Western Avenue (between 45<sup>th</sup> Street and 41<sup>st</sup> Street), and Military Road (between Western Avenue and 41<sup>st</sup> Street) over two days, a typical weekday and a Saturday. Members of the Study Team drove each of the three key corridors several times in each direction during both morning and afternoon peak-periods and recorded the elapsed travel times at predetermined travel points and the distance between the selected travel points. The data collectors were instructed to drive at the same speed as most of the vehicles traversing the study area; therefore, in some cases, the data collectors traveled at speeds above the speed limit.

As shown in Exhibit 18, the average speeds on Wisconsin Avenue, Western Avenue, and Military Road were generally slower than the posted speed limit. On eastbound Military Road and northbound Wisconsin Avenue, the average traffic speed during weekday PM peak hours was 11 mph slower than the posted speed limit.

**Exhibit 18: Average Travel Speed Recorded – Floating Car Survey at Selected Segments**

Date	Time	Wisconsin Avenue		Western Avenue		Military Road	
		NB	SB	WB	EB	WB	EB
Posted Speed		30 MPH	30 MPH	25 MPH	25 MPH	25 MPH	25 MPH
Average Weekday	AM Peak	20	31	23	22	26	24
	Midday	21	20	19	24	21	20
	PM Peak	19	23	23	25	20	14
Weekend - Saturday	AM	20	17	21	24	18	25
	Midday	17	17	18	23	22	24
	PM	11	16	20	20	19	23

## 2.6.5 Vehicular Queues

To respond to concerns about queuing problems on Wisconsin Avenue, Western Avenue, and Military Road, the Study Team observed morning and afternoon peak hour queuing. The Study Team targeted the following four locations for peak queuing observations:

- Wisconsin Avenue at Western Avenue
- Western Avenue at Military Road
- Wisconsin Avenue at Jenifer Street
- Military Road at 41<sup>st</sup> Street/Reno

Each of these intersections has four approaches, which means that queues can occur on a total of 16 approaches in each peak hour for total of 32 observation areas. All of the queued vehicles were able to clear the intersection during a single signal cycle except at five approaches, listed in Exhibit 19, during at least one peak-hour. As Exhibit 19 indicates, the most critical queuing occurs along the Military Road approach to 41<sup>st</sup> Street during the afternoon peak hour. This is the only location where a significant proportion of the queued vehicles wait through two or more

signal cycles before being discharged. More detailed field survey results are provided in Appendix E.

**Exhibit 19: Vehicular Queuing Counts**

<b>Location</b>	<b>Peak Hour</b>	<b>Average Queue (# of vehicles)</b>	<b>Maximum Queue (# of vehicles)</b>
Wisconsin Ave. SB Left-turn @ Western Ave.	PM	9	18
Western Ave. EB Left-turn @ Wisconsin Ave.	AM	1	7
Western Ave. WB Right-turn @ Wisconsin Ave.	AM	5	9
Military Rd. WB Approach @ Western Ave.	AM	16	23
Military Rd. EB Approach @ 41 <sup>st</sup> St.	PM	29	34

#### ***2.6.6 Truck Origin-Destination and 43<sup>rd</sup> Street Cut-Through Traffic Patterns in the Study Area***

In addition to the vehicle classification evaluation based on mechanical traffic counts, the Study Team conducted license plate surveys to further investigate truck and cut-through traffic in the study area. For the two streets identified as “cut-through” targets, 43<sup>rd</sup> Street between Military Road and Jenifer Street and Garrison Street between Wisconsin Avenue and 44<sup>th</sup> Street, both truck and auto license tags were captured. For these two streets, resident versus non-resident status was determined through the District Department of Motor Vehicle records, eliminating license plates with an address in the study area.

The Study Team concentrated on eight intersections to determine the origin and destination (OD) of truck traffic and cut-through traffic passing through the study area from 7:00AM to 6:00PM on April 23, 2003. The following eight intersections were studied:

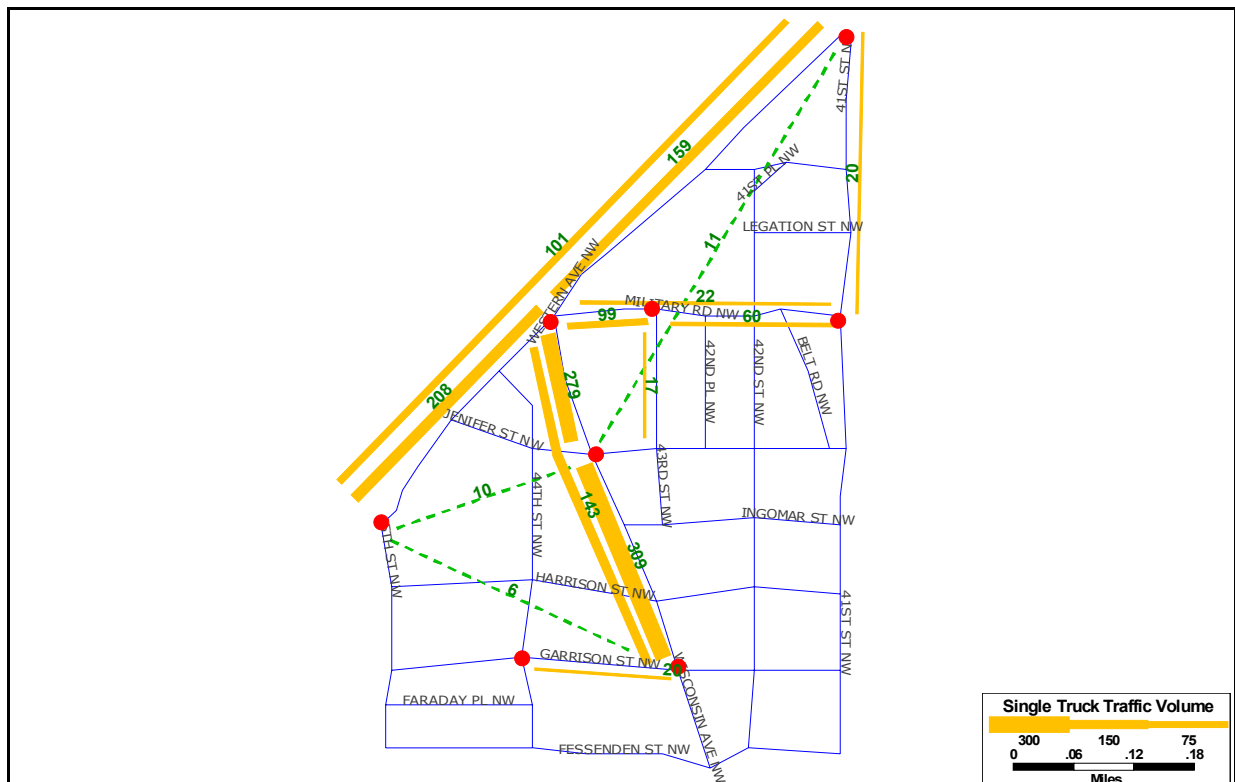
1. Western Avenue at 41<sup>st</sup> Street, N.W.
2. Wisconsin Avenue at Western Avenue, N.W/Military Road.
3. Western Avenue at 45<sup>th</sup> Street, N.W.
4. Wisconsin Avenue at Jenifer Street, N.W.
5. Wisconsin Avenue at Garrison Street, N.W.
6. Military Road at 43<sup>rd</sup> Street, N.W. (including auto)
7. Military Road at 41<sup>st</sup> Street, N.W.
8. 44<sup>th</sup> Street at Garrison Street, N.W. (including auto)

Using handheld computers to reduce data transcription time, license plate information (plate number and state) was recorded, along with vehicle classification (bus, single trucks, and tractor trailer). During 11 hours of data collection on April 23, over 11,000 vehicles were recorded, including approximately 2,000 buses, 5,800 single-unit trucks, and 400 tractor trailers at all data collection points. Approximately 2,900 passenger vehicles were recorded at the two designated sites. Some observations were not included in the database due to insufficient license plate information; this was typically due to obscured license plates (dirty tags, visual obstruction by

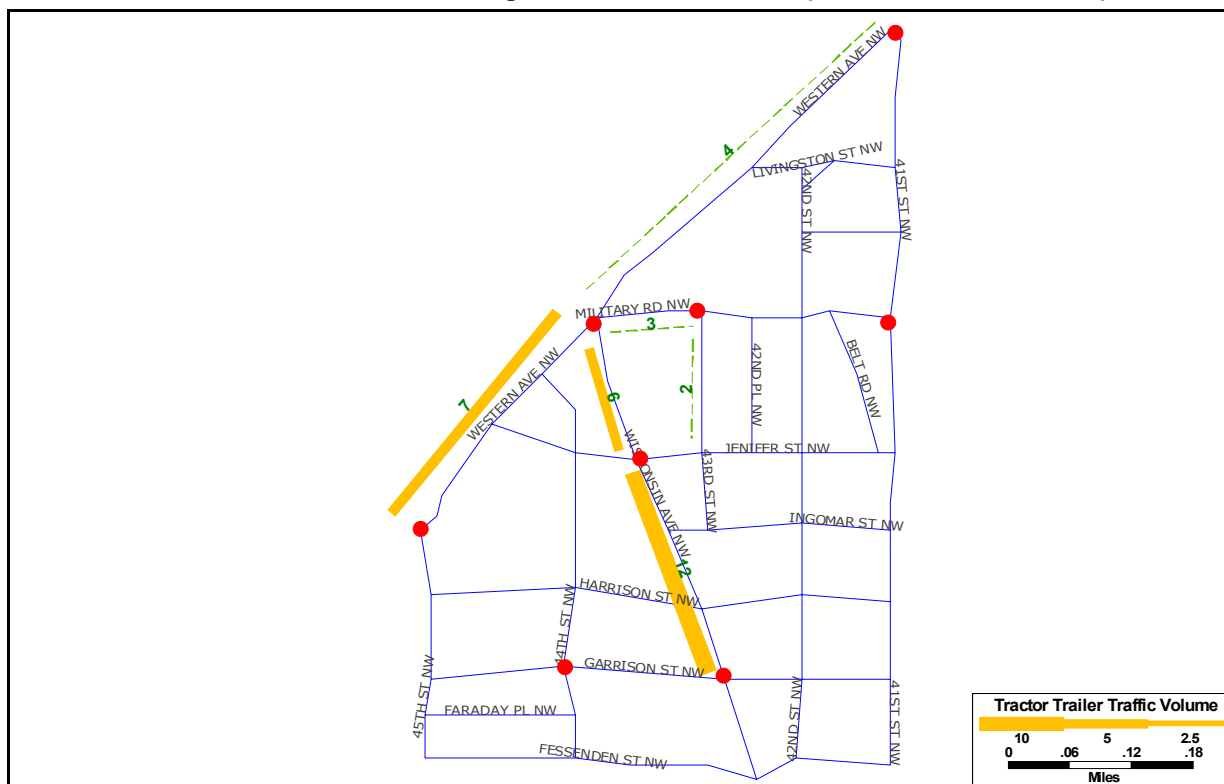
other vehicles or multiple vehicles presented at once). In addition, many truck tags were only captured at a single location and could not be matched for the origins-destination element of the study. This explains the discrepancy between the mechanical volumes reported above and the adjusted analyses.

A significant number of trucks were found to be traveling along arterial routes such as Wisconsin Avenue, Western Avenue, and Military Road in the study area. Exhibits 20 through 22 illustrate origin-destination license plate matches for trucks, buses, and tractor trailers. The trip matrix is provided as Appendix F. In order to identify significant OD patterns, intersection pairs with fewer than five observations of license plate “matches” were generally excluded, with the exception of possible cases of “local street” cut-through. Solid lines in the exhibits illustrate traffic volume flows while dotted lines show a path with lesser volumes possibly representing cut-through traffic using local streets.

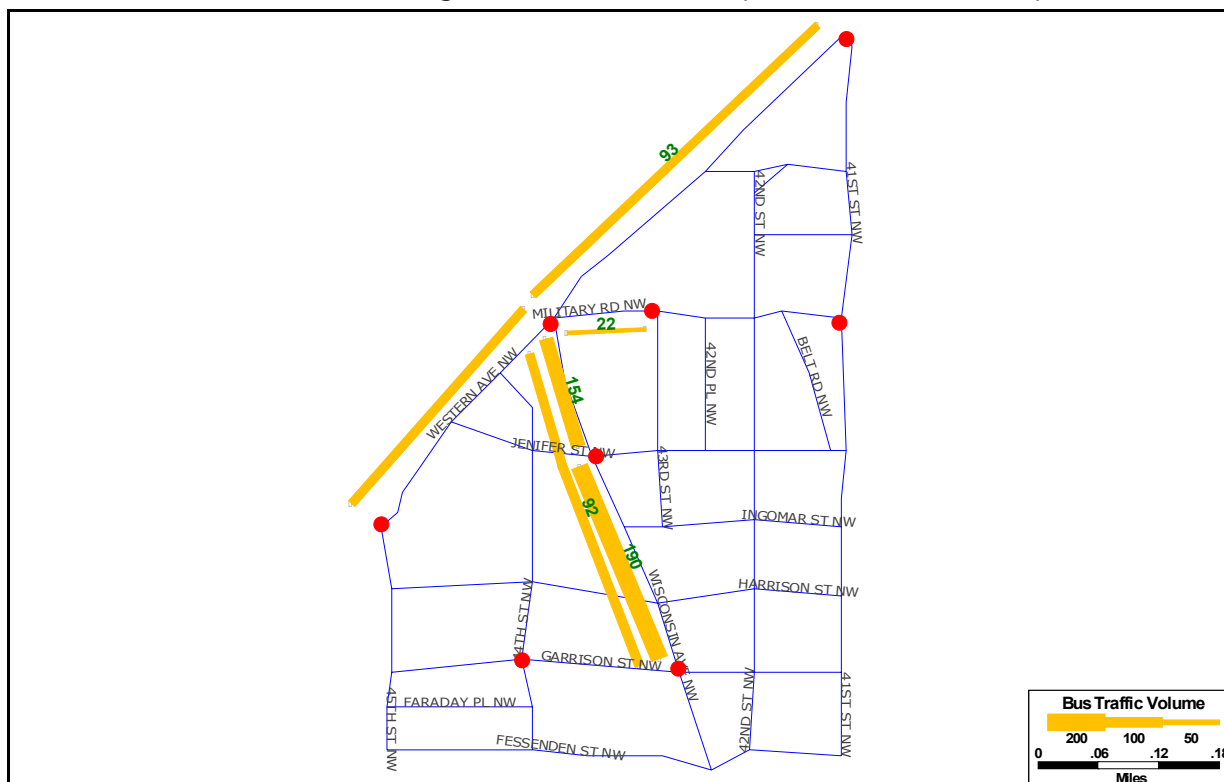
**Exhibit 20: Single Truck Origin-Destination Pattern (between 7AM and 6PM)**



**Exhibit 21: Tractor Trailer Origin-Destination Pattern (between 7AM and 6PM)**



**Exhibit 22: Bus Origin-Destination Pattern (between 7AM and 6PM)**



### **Cut-Through Traffic on 43<sup>rd</sup> Street**

Over 1,400 vehicles (truck and auto) were recorded from 9:00AM to 6:30PM passing through 43<sup>rd</sup> Street from Military Road to Jenifer Street during the field observation on June 12, 2003. Traffic flow on 43<sup>rd</sup> Street was constant with an average of 36 vehicles every 15 minutes (an average of 2 vehicles per minute). A relatively higher concentration of traffic was observed between 11:00AM and 2:00PM and between 4:00PM and 6:00PM with 53 vehicles per 15-minutes and 46 vehicles per 15 minutes, respectively.

During the truck origin-destination field observation, 17 single-unit trucks and two tractor-trailers were recorded on 43<sup>rd</sup> Street. This information was further verified with an additional field observation described above, recording 28 trucks and commercial vans (18 light trucks, four heavy trucks, and nine commercial vans). Currently, 43<sup>rd</sup> Street has “No Truck Through Traffic with 1¼ tons” sign.

### **2.6.7 Safety**

#### ***Accident Data***

An assessment of safety conditions in the study area is another important component for understanding existing road conditions. The Study Team obtained accident data from the District of Columbia Department of Transportation (DDOT) from 2000 through 2002. DDOT had accident data available for 14 intersections in the study area.

As summarized in Exhibit 23, five intersections (bold) had more than 15 accidents over the last three years (2000-2002). The intersection of Wisconsin Avenue and Jenifer Street had the highest number of incidents, 34, followed by two other Wisconsin Avenue intersections: at Western Avenue (23 incidents) and at Fessenden Street (22 incidents).

The intersection at Military Road and 42<sup>nd</sup> Street is a minor arterial street intersecting with a local street, allowing only right turn movements from 42<sup>nd</sup> Street northbound. As shown in Exhibit 23, there were 15 accident cases with injuries. Approximately 73 percent of the incidents were due to right angle movements during the afternoon peak-hour.

Detailed accident data at each of 14 intersections is provided in Appendix G.

**Exhibit 23: Accident Data Summary Between 2000 and 2002**

Intersections	Accident Summary							
	Right Angle	Left Turn	Rear End	Side Swiped	Pedestrian	Other	Total # of Accidents	Total # of Injuries
Western Ave. & 41 <sup>st</sup> St.	0	1	0	2	0	2	5	2
Western Ave. & Jenifer St.	0	2	2	1	1	1	7	7
<b>Wisconsin Ave. &amp; Western Ave.</b>	<b>2</b>	<b>3</b>	<b>5</b>	<b>8</b>	<b>1</b>	<b>4</b>	<b>23</b>	<b>12</b>
Military Rd. & Western Ave.	0	0	0	4	0	0	4	0
Military Rd. & 43 <sup>rd</sup> St.	0	0	0	2	2	4	8	5
Military Rd. & 42 <sup>nd</sup> Pl.	1	0	0	0	0	0	1	1
<b>Military Rd. &amp; 42<sup>nd</sup> St.</b>	<b>11</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>15</b>	<b>15</b>
Military Rd. & 41 <sup>st</sup> St.	0	1	0	0	0	3	4	0
<b>Wisconsin Ave. &amp; Jenifer St.</b>	<b>2</b>	<b>1</b>	<b>8</b>	<b>12</b>	<b>2</b>	<b>9</b>	<b>34</b>	<b>14</b>
<b>Wisconsin Ave. &amp; Harrison St.</b>	<b>3</b>	<b>2</b>	<b>6</b>	<b>6</b>	<b>1</b>	<b>1</b>	<b>19</b>	<b>9</b>
Wisconsin Ave. & Garrison St.	0	0	2	1	0	5	8	4
<b>Wisconsin Ave. &amp; Fessenden St.</b>	<b>6</b>	<b>2</b>	<b>9</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>22</b>	<b>12</b>
Jenifer St. & 44 <sup>th</sup> St.	0	0	0	1	0	1	2	5
River Rd. & Fessenden St.	0	0	0	0	0	1	1	0

### ***Pedestrian Movements***

Pedestrian movements were recorded at the same 12 intersections listed earlier in the Section 2.6.2 *Turning Movement Traffic Counts*. Pedestrian volume counts were collected during morning and afternoon peak hours to identify critical intersections for both passenger car and pedestrian crossing safety. As shown in Exhibit 24, a high volume of pedestrian activity was observed at the following locations:

- Wisconsin Avenue between Garrison Street and Western Avenue
- Western Avenue between Jenifer Street and Wisconsin Circle
- Military Road at its intersection with 43<sup>rd</sup> Street

The finding is consistent with the significant commercial/retail land uses located along these roadways, as well as the proximity to the Friendship Heights Metrorail station.

Additionally, pedestrian jay-walking (e.g., crossing outside of a pedestrian crossing) was observed along three sections of Wisconsin Avenue, between Western Avenue and Jenifer Street. The observations were conducted on a typical weekday, between the hours of 11:00AM and 1:00PM. A total of 219 jay-walking movements were observed during the two-hour midday period, with 95 crossings and 124 crossings occurring in the hours of 11:00AM – 12:00PM and 12:00PM-1:00PM, respectively. Complete pedestrian crossing data and jay-walking counts are provided in Appendix H.

**Exhibit 24: Peak Hour Pedestrian Crossing Volumes**

## **2.6.8 Parking**

### **Parking Inventory**

A parking inventory was conducted throughout the study area including both lot/garage facilities and on-street parking. More than 3,000 lot and garage parking spaces are available in the study area (Exhibit 25). Fees range between free (for 1 hour) and \$12 (per day). The Lord & Taylor parking lot is free on weekends.

There are three types of metered parking in the study area: 2 hour, 1 hour, and 30 minute, along Wisconsin Avenue, Jennifer, Harrison and Garrison Streets (between Wisconsin Avenue and 44<sup>th</sup> Street), 43<sup>rd</sup> Street (south of Jennifer Street), and 44<sup>th</sup> Street (between Jennifer and Harrison Streets). On Wisconsin Avenue, parking is prohibited between 7:00AM and 9:30AM southbound and 4:00PM and 6:30PM northbound. The afternoon peak period parking restriction along Wisconsin Avenue is lifted after 6:30PM. Once it is lifted, traffic backs up along Wisconsin Avenue, especially northbound, due to the heavy volume of traffic traveling along the corridor at that hour. The traffic back-up along Wisconsin Avenue northbound continues through 7:00PM.

Maggiano's restaurant on Wisconsin Avenue between Western Avenue and Jennifer Street provides valet parking, starting at 5:00PM. Currently, there is a small parking bay, which can accommodate only two vehicles. During the field observation, it was noted that the valet parking option, on occasion, created double-parking on Wisconsin Avenue during afternoon rush-hour. This produced traffic back-ups on Wisconsin Avenue by reducing the through-lanes from three to two.

Most streets allow on-street parking (free) on both sides, with the following exceptions:

- Fessenden Street (eastbound the east of Wisconsin Avenue and westbound the west of Wisconsin Avenue)
- Ingomar Street (westbound)
- Military Road (westbound)
- 41<sup>st</sup> Street (southbound between Military Road and Morrison Street).

Other on-street parking requires either a "Zone 3 Permit" or allows 2-hour parking between 7:00AM and 8:30PM (6:30PM for some streets), except for a few spaces along 41<sup>st</sup> Street north of Military Road.

### **Parking Utilization**

Parking utilization in the study area was recorded over two days on a typical weekday; Saturday parking utilization was also observed on a limited basis. During the field observation, garage/lot parking facilities were utilized between 20 and 90 percent of their capacity during morning and afternoon peak hours. As expected, weekend garage/lot parking facilities were underutilized, except at the Lord & Taylor lot (100 percent utilized), where free parking was offered. It was noted that a higher parking garage utilization rate was recorded at the facility with an entrance on Wisconsin Avenue, and at facilities closest to office buildings. Exhibit 26 shows the parking utilization rates at garage/lot facilities in the study area.

The on-street parking utilization rate was high (over 90 percent) on streets adjacent to Wisconsin Avenue. During the observation, morning peak hour parking utilization was generally lower than the results from the afternoon peak hour. It is clear that as the day progresses, the parking utilization rate increases, which is demonstrated in afternoon utilization. It was also noted that morning parking utilization was generally higher on Harrison and Garrison Streets (west of Wisconsin Avenue) and Fessenden Street. Findings from parking utilization observation indicate that more non-residents/visitors are parking west side of Wisconsin Avenue, resulting in higher demand for parking, particularly on streets adjacent to Wisconsin Avenue. Exhibits 27 and 28 illustrate the morning and afternoon peak-hour parking utilization rate in the study area. Appendix I shows detailed parking inventory and utilization tables.

Weekend (Saturday) on-street parking utilization was also observed on selected streets, (between Military Road and Harrison Street, and between 44<sup>th</sup> Street and 42<sup>nd</sup> Street). While on-street parking utilization varied street by street, streets adjacent or parallel to Wisconsin Avenue had high utilization rates. The parking demand in the study area on Wisconsin Avenue, 43<sup>rd</sup> Street, 44<sup>th</sup> Street between Jenifer and Harrison Streets, Jenifer Street between 44<sup>th</sup> and 43<sup>rd</sup> Streets, and Ingomar Street between 43<sup>rd</sup> and 42<sup>nd</sup> Streets, exceeded estimated parking capacity for some streets (Exhibit 29).

Overnight on-street parking utilization on most streets was less than 50 percent, which indicates a high volume of non-resident parking on many of local streets in the study area during daylight hours and evenings. This non-resident parking can be attributed to proximity to commercial properties and to the Metro station.

### **Parking Violations**

Concurrent with the parking utilization data collection effort, parking violations were observed on local streets. Every parking space on several local streets was observed during a 2-hour cycle period, recording tag numbers for vehicles without a “Zone 3 Permit”. Vehicles parked on these local streets without a “Zone 3 Permit” after the 2-hour period were recorded as illegally parked vehicles. Exhibit 30 shows the parking violation rate recorded in the study area.

The highest number of parking violations (33 to 66 percent) were observed on 43<sup>rd</sup> Street, 42<sup>nd</sup> Place, Jenifer Street, and 42<sup>nd</sup> Street between Military Road and Garrison Street. Frequent violations of “No-Standing” during rush hours were also observed on Wisconsin Avenue. It was also apparent that double and illegal parking of delivery trucks and other vehicles on Wisconsin Avenue and Military Road were a serious contributing factor to longer delays, and threatened pedestrian safety. These types of violations were fewer on the local streets farther away from the Wisconsin Avenue commercial district.

**Exhibit 25: Study Area Parking Inventory**

**Exhibit 26: Parking Lot/Garage Facility Utilization (AM and PM)**

**Exhibit 27: Weekday AM Utilization Rate**

**Exhibit 28: Weekday PM Utilization Rate**

**Exhibit 29: Saturday Utilization Rate**

**Exhibit 30: Parking Violation Rate**

## 2.7 EXISTING LEVELS OF SERVICE

The Study Team used SYNCHRO, a traffic modeling/analysis program, to evaluate existing traffic conditions at the signalized intersections in the study area. Existing traffic volumes, lane configurations, and signal timing were used to develop a base case traffic model. A traffic simulation of the existing base case condition was then developed using SIMTRAFFIC, SYNCHRO's associated traffic simulation software. SIMTRAFFIC was utilized at the public meetings to visually depict the existing traffic flow condition on the major streets in the study area.

The level of service (LOS) was analyzed at 12 intersections listed earlier in Section 2.6.2 *Turning Movement Traffic Counts*. Ten out of 12 intersections were signalized and the rest were unsignalized. The LOS analysis uses a six-tier ranking from A to F to evaluate overall intersection capacity compared to existing traffic volume. LOS A indicates a free flow and LOS F represents an intersection capacity failure condition with long delays. A detailed definition of LOS is provided in Appendix J.

Exhibits 31 and 32 show existing levels of service for the study area for the morning and afternoon peak hours. In general, the analysis shows that levels of service are worse during the afternoon peak hour than the morning peak hour due in part to the afternoon activities such as shopping and dining in the study area. The worst level of service observed at a signalized intersection is the intersection of Military Road and 41<sup>st</sup> Street. An average delay time at this intersection is 1 minute and 30 seconds during afternoon-peak hours, which is longer than one signal cycle length. The levels of service at Military Road-Reno Road and Western Avenue-41<sup>st</sup> Street are worse than a LOS D, causing an average delay time of almost a minute. The average delay time along Wisconsin Avenue is relatively low.

In addition to the ten signalized intersections, two unsignalized intersections, Wisconsin Avenue-Garrison Street and Military Road-43<sup>rd</sup> Street were analyzed. Levels of service at these intersections were measured using the *Highway Capacity Manual Unsignalized Intersection Capacity Analysis*. Unsignalized intersections operate in a fashion that the major street travels without interruption or delay, while the minor street often has a lengthy delay trying to enter or cross the heavier major street. The analysis shows that for drivers at the intersection of Wisconsin Avenue-Garrison Street, an average delay for the minor street during the morning peak hours was almost 3 minutes. Afternoon peak hour average delay was less than one minute due to restricted Wisconsin Avenue southbound left-turn movements at this intersection. Unlike the intersection of Wisconsin Avenue and Garrison Street, drivers at the intersection of Military Road-43<sup>rd</sup> Street experience an average of less than 20 seconds average delay in both the morning and afternoon peak hours.

**Exhibit 31: Existing Weekday Intersection Level of Service**

Node #	Intersection	AM Peak Hours		PM Peak Hours	
		Level of Service	Average Delay (Sec./Veh.)	Level of Service	Average Delay (Sec./Veh.)
1	Western Ave. @ 41 <sup>st</sup> St. NW	<b>C</b>	25.4	<b>D</b>	52.3
2	Western Ave. @ Military Rd. N.W.	<b>B</b>	16.1	<b>B</b>	18.4
3	Wisconsin Ave. @ Western Ave. N.W.	<b>C</b>	33.1	<b>D</b>	35.1
4	Western Ave. @ 44 <sup>th</sup> St. N.W.	<b>B</b>	16.0	<b>B</b>	10.5
5	Western Ave. @ Jenifer St. N.W.	<b>B</b>	11.6	<b>B</b>	15.5
6	Wisconsin Ave. @ Jenifer St. N.W.	<b>C</b>	28.6	<b>C</b>	24.4
7	Wisconsin Ave. @ Harrison St. N.W.	<b>A</b>	6.1	<b>A</b>	9.4
8	Wisconsin Ave. @ Garrison St. N.W.	<b>F*</b>	166.8*	<b>E*</b>	38.5*
9	Wisconsin Ave. @ Fessenden St. N.W.	<b>B</b>	16.5	<b>C</b>	34.7
10	Military Rd. @ 43 <sup>rd</sup> St. N.W.	<b>C*</b>	17.9*	<b>C*</b>	18.0*
11	Military Rd. @ 41 <sup>st</sup> St. N.W.	<b>B</b>	18.7	<b>F</b>	92.7
12	Military Rd. @ Reno Rd. N.W.	<b>B</b>	13.4	<b>E</b>	56.3

\* These are unsignalized intersections. Levels of service at these intersections were measured based on the Highway Capacity Manual Unsignalized Intersection Capacity Analysis. Delay is for minor street approach only.

**Exhibit 32: Illustrated Existing Weekday Level of Service**

